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**Inside-out and Outside-in Orientations: A Meta-Analysis of Orientation's Effects on
Innovation and Firm Performance**

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Abstract

The inside-out and outside-in orientations place differing levels of emphasis on internal versus external resources and capabilities as sources of competitive advantage. While the inside-out orientation primarily considers organizational resources, followed by competitors and customers (implicitly), the outside-in orientation appears to reverse the order by first examining customers and competitors and then the degree to which the firm responds to them, implicitly addressing organizational resources. Existing empirical evidence does not clarify the comparative effects of inside-out and outside-in orientations on innovation performance. This paper draws on 232 independent studies (N = 38,051) analyzed systematically through a quantitative meta-analytic synthesis in order to develop a detailed contextualized elaboration of the relationships between the inside-out and outside-in orientations and innovation performance. Going beyond the direct effects, we also extend the literature by investigating the moderating effects of industry type (high-tech vs. low-tech), economic development (developed vs. developing countries), and cultural context (collectivist vs. individualist cultures). Our findings shed light on the relative value of inside-out and outside-in orientation for innovation performance, the direct and indirect effects of the two orientations on firm performance, and the conditions under which the effectiveness of each is enhanced.

Keywords: inside-out orientation, outside-in orientation, innovation performance, firm performance, resources, capabilities, knowledge, high-technology industry, meta-analysis.

1. Introduction

Innovation is a process through which organizations change in response to or in anticipation of an increasingly competitive and dynamic global business environment (e.g., Pitt & Clarke, 1999). Innovation combines the organization's skills and knowledge with the needs of customers and users outside or inside the organization in a novel way (e.g., Renko, Carsrud, & Brannback, 2009). Firms with the capacity to innovate can respond to environmental challenges faster and better than non-innovative firms can (e.g., Brown & Eisenhard, 1995). Following Crossan and Apaydin, (2010: p. 1155), we define innovation as the “production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems.” Innovation is widely regarded as critical for the economic viability of firms and nations and is one of the key drivers of long-term success and competitive advantage (Baker & Sinkula, 2002; Darroch & McNaughton, 2002; Lyon & Ferrier, 2002). Recent meta-analytical studies have provided evidence of a positive relationship between a firm's innovation performance and its overall performance (e.g., Calantone, Harmancioglu, & Droge, 2010; Rubera & Kirca, 2012; Rosenbusch, Brinckmann, & Bausch, 2011). However, extant research offers disconnected picture of the relative value of internal and external determinants of firm-level innovation performance. (See, e.g., Makhija, 2003; Paladino, 2007, 2008.)

Innovation performance may be credited to the firm's internal and external knowledge, resources, and capabilities (Powell, 1996). In particular, research has implicitly identified two complementary strategic approaches, or orientations, to the use of firm resources for innovation performance (Day, 2011). The first approach, the *inside-out orientation*, focuses on firm-specific internal resources and capabilities (Barney, 1991; Day,

2011; Miller, Eisenstat, & Foote, 2002). The success of this orientation is based on a firm's ability to leverage and deploy its existing knowledge and capabilities through inside-out processes, that is, processes that begin with the firm and look outward (Day, 2011; Kleinschmidt, Brentani, & Salomo, 2010; Paladino, 2007). The second approach, the *outside-in orientation*, centers on knowledge and resources that reside outside the firm—such as customers, suppliers, competitors, and end-product market positions—as the linchpins of innovation (Atuahene-Gima, 1996; Frambach, Prabhu, & Verhallen, 2003; Paladino, 2007). From this perspective, firms integrate knowledge and capabilities from external sources through an outside-in process in developing successful innovations (e.g., Kahn, 2001; Kohli & Jaworski, 1990).

While the inside-out and outside-in approaches have been associated with distinct strategic orientations (e.g., Paladino, 2007), there is little empirical evidence about their relative impact on innovation performance (e.g., Makhija, 2003; Paladino, 2008; 2009; Roquebert, Phillips, & Westfall, 1996). Consequently, an important question remains concerning the relative importance of inside-out and outside-in orientations on improving innovation and firm performance (Henderson & Mitchell, 1997; Makhija, 2003). It is also unclear whether the effects of these orientations on overall performance are exclusively indirect, that is, whether their effects come through their positive impact on innovation performance, or whether there are also direct effects. (See, e.g., Paladino, 2007; 2009.)

The present research examines 232 independent studies systematically through a quantitative meta-analytic synthesis and develops a detailed and contextualized elaboration of the relationship between the inside-out and outside-in orientations with innovation performance at the firm level. For the first time our study offers a comprehensive set of individual manifestations of inside-out and outside-in orientations in one study, thereby

clarifying the comparative effects of outside-in and inside-out orientations on firms' innovation performance. In pursuing this objective, we generate four distinct contributions.

First, we address the “untangling” problem Henderson and Mitchell (1997) point out and that a few empirical studies (e.g., Makhija, 2003; Paladino, 2007, 2008) address. In fact, since a firm's internal resources and capabilities and its external market position are conceptually entangled (Henderson & Mitchell, 1997; McGahan & Porter, 1997), our study helps to clarify their interdependence in fostering innovation. Second, we provide insight, in addition to the findings of Calantone et al.'s (2010) extensive meta-analysis, by extending the database of studies (from 64 studies; N = 12,921 to 232 studies ; N = 38,051) and by examining drivers of firm innovation performance through the lenses of inside-out/outside in (Day, 1994, 2011; Paladino, 2008). Third, we contribute to the innovation literature by using an integrative framework to examine the antecedents and consequences of innovation performance simultaneously with the comparative effects of inside-out and outside-in orientations on innovation performance. Fourth, this study contributes to the research on industry- and country-level contingencies in the relationship between strategic orientations and innovation performance. Specifically, we extend the literature by investigating the moderating effects of economic development (developed vs. developing countries), cultural context (collectivist vs. individualist cultures), and industries' technological intensity (high-tech vs. low-tech) on the impact of inside-out orientation and outside-in orientation on innovation performance.

The paper is organized as follows. First, we present a theoretical overview and develop the key hypotheses of the direct and moderating effects as proposed in our research framework depicted in Figure 1. Next, the methodology is described and results are

discussed. Finally, we present the implications of our findings for research and management and propose avenues for future research.

Insert Figure 1 Here

2. Theoretical background and hypotheses

2.1 The inside-out orientation

Rooted in economics and strategic management literature, the inside-out orientation is an internally oriented strategic posture, the focus of which lies on how a firm achieves superior performance by developing, possessing, capitalizing on, and deploying strategic firm-specific resources that are valuable, scarce, inimitable, and non-substitutable (Barney, 1991; Day, 2011; Miller et al., 2002). The firm uses its internal resource base to exploit opportunities and/or to neutralize threats that arise in the external environment (Paladino, 2009). These resources are often idiosyncratic and embodied in the form of tacit knowledge within the social fabric of the firm (Auh & Menguc, 2009; Makhija, 2003). Research has frequently used the inside-out perspective to examine the function of resources in creating competitive advantage through innovation performance (e.g., Ahuja & Katila, 2004).

A dynamic strain of the inside-out orientation that draws on evolutionary economics is the theory of organizational dynamic capabilities (ODCs: Day, 2011; Newbert, 2007; Zott, 2003). ODCs, defined as the processes through which firms integrate, reconfigure, renew, and recreate resources and capabilities over time (Teece, Pisano, & Shuen, 1997), play a key role in enhancing an organization's innovation performance (Brockmand & Morgan, 2003; Eisenhardt & Martin, 2000; Helfat et al., 2007). Through a systematic review of organizational innovation literature, Crossan and Apaydin (2010) propose that ODCs reside in five types of managerial levers: (1) *organizational mission and explicit innovation strategy* (2) *resource allocation* (e.g., absolute and relative R&D intensity, commitment to

differentiated funding, annual turnover of resources, and slack resources); (3) *structure and systems* (e.g., organizational complexity and administrative intensity, formalization, specialization, and centralization; fit among organizational design and type of innovation, and number of employees); (4) *knowledge management systems* (e.g., formal idea-generation tools, external links with universities, the quality of these links, formal information-gathering, and customer contact time and frequency); and (5) *organizational culture* (e.g., a clearly stated, attainable, and valuable shared vision; promoting autonomy; calculated risk-taking; motivation; and the attractiveness of the organizational climate).

Crossan and Apaydin (2010) and Paladino (2007, 2009) suggest that in a hyper-competitive environment, where innovation is paramount, a firm must be able to create dynamic capabilities in order to cultivate and transfer collective knowledge within these managerial levers, as effective utilization and control of such knowledge will augment innovation performance (Crossan & Apaydin, 2010; Paladino, 2006, 2007, 2009). Therefore,

H1: The inside-out orientation is positively related to a firm's (a) innovation performance and (b) overall performance.

2.2 The outside-in orientation

The marketing literature has long considered the importance of a market focus and the firm's external environment in enhancing innovation and overall performance (e.g., Calantone et al., 2010; Cano, Carrillat, & Jaramillo, 2004; Ellis, 2006; Grinstein, 2008; Kirca, Jayachandran, & Bearden, 2005). Research also suggests that the degree to which a firm is involved in innovative activities depends on the extent and nature of its market orientation (MO) (Atuahene-Gima, 1996, 1995; Frambach et al., 2003; Grinstein, 2008; Tyler & Gnyawali,

2002). In a meta-analysis of 114 studies, Kirca et al. (2005) report that 17 percent of all consequences of MO are related to innovation performance.

Day (1994) defines a market-oriented organization as flexible and adaptable but as “maintaining a primary focus on the external environment” (p. 54). An outside-in orientation enables businesses to achieve competitive advantage by anticipating market requirements ahead of competitors, thus establishing lasting relationships with customers and other stakeholders (Day, 1994). An outside-in orientation also generates knowledge about expressed and latent customer needs and about competitors’ capabilities, strategies, and products and emphasizes superior value for customers, the importance of the end-product’s market position, and that position’s direct relationship with future returns (Narver & Slater, 1990; Tallman, 1991). In contrast to the inside-out orientation, this perspective focuses outside the firm, toward the markets in which it competes, suggesting that assets arise from a firm’s interaction with entities in its external environment (Hult & Ketchen, 2001).

Research has provided strong evidence that the outside-in orientation leads to successful innovation performance (e.g., Atuahene-Gima, 1995; Baker & Sinkula, 2005; De Luca & Atuahene-Gima, 2007; Kahn, 2001). Kirca et al.’s (2005) meta-analysis shows that outside-in orientation (i.e., MO) affects firm performance through innovation performance, customer loyalty, and quality. The rationale is that these firms devote more resources and time to structures and processes that engender an in-depth knowledge of their customers’ underlying needs in comparison to inside-out orientated firms (Han, Kim, & Srivastava, 1998; Lukas & Ferrell, 2000). Coupled with a detailed knowledge of the marketplace that allows these firms to respond to marketplace changes quickly and accurately (e.g., Pelham, 1997), this in-depth customer knowledge enables them to devise continuous and timely innovative offerings (e.g., Atuahene-Gima, Slater, & Olson, 2005; Slater & Mohr, 2006).

Furthermore, outside-in oriented firms are more able than other firms to deal with uncertainty and take risks, both of which are critical factors in successful innovation performance (Olson, Walker, & Ruekert, 1995; Sethi, Smith, & Park, 2001). Close partnership with customers may also provide a firm with access to outside-in knowledge that it lacks in-house (Campbell & Cooper, 1999). Hence, by granting superior connectedness with a changing marketplace, the outside in orientation can enhance innovation performance (Henard & Szymanski, 2001).

Therefore,

***H2:** The outside-in orientation is positively related to a firm's (a) innovation performance and (b) overall performance.*

2.4 Moderating influence of industry- and country-level factors

In the increasingly competitive and dynamic global business environment, firms must continually examine their unique bundles of resources, knowledge, and dynamic capabilities to ensure that they are pertinent in the context of the changing environment in which they compete (Webster, 1994). Research suggests that a firm's ability to commercialize a new product successfully depends not only on the firm's own capabilities but also on a wide range of factors in its broader national context (Spencer, 2003). While it is useful to determine whether the inside-out and the outside-in orientations improve innovation performance, we seek a more detailed, contextualized elaboration of these relationships.

Several meta-analyses have suggested that effect sizes may differ because of contextual contingencies (e.g., Calantone et al., 2010; Rosenbusch et al., 2011; Unger et al., 2011). For example, Unger et al. (2011) find that the relationship between human capital and firm performance is stronger in high-tech industries than in low-tech industries. The contextual conditions act as constellations of mutually supportive variables and, through their

moderating effects and interaction with the inside-out and the outside-in orientations, improve innovation performance (Miller, 1986). A contingency perspective emphasizes the importance of fit among a firm's strategic posture and other constructs of interest (Lumpkin & Dess, 1996). Lyon, Lumpkin, and Dess (2000) emphasize that such contingency modeling requires further examination in order to develop useful theories and models of innovation management. Therefore, we examine whether the strength of the relationships between the inside-out and outside-in orientations and innovation performance is moderated by industries' technological intensity (high-tech vs. low-tech) and country-level (economic development and national culture) contextual factors.

2.4.1 High-tech vs. low-tech industries. The high-tech industry (i.e., industries that depend significantly on science and technology) is viewed as being closely related to innovation. Because of these industries' rapidly changing technologies and relatively short product life cycle, innovation is these firms' lifeblood (McCann & Arita, 2006). Firms in the high-tech industry continuously encounter the need for an expanded paradigm in order to understand how competitive advantage is achieved, and successful firms are those that demonstrate timely responsiveness, radical and incremental innovation, and the effective integration of the inside-out and outside-in orientations (Hsieh, Tsai, & Wang, 2008). Dutta, Narasimhan, and Rajiv (1999) find a strong outside-in orientation to be one of the most fertile sources of ideas for innovation in the high-tech industry and a strong interaction between the inside-out orientation (i.e., strong R&D and technological base) and the outside-in orientation (i.e., marketing capabilities), where inside-out considerations stand to gain most from a strong outside-in base. Similarly, De Luca, Verona, and Vicari (2010) show that in high-tech industries the formal integration of inside-out orientation with outside-in orientation (i.e.,

customer orientation) can improve performance. Not surprisingly, companies with large resources (inside-out orientated) are not as able to innovate well due to their inability to integrate their internal resources with their external capabilities (Teece et al., 1997).

The outside-in orientation leads to innovation, creativity, and improved firm performance in high-tech firms (Im & Workman, 2004). Drucker (1985) suggests that the need for outside-in orientation is particularly important for knowledge-based innovation, such as those seen in most high-tech industries: “It may seem paradoxical, but knowledge-based innovation is more market-dependent than any other kind of innovation. Careful analysis of the needs, and above all, the capabilities of the intended user is essential” (Drucker, 1985, p. 9). Thus, outside-in orientation is particularly important for high-tech firms, where the inside-out orientation (i.e., technology knowledge and skills) that creates innovation in the first place can take on a higher status relative to that of the needed outside-in orientation (marketing skills). Such a preference can lead to rigidity and be a barrier to innovation performance (Leonard-Barton, 1992). Based on this discussion, then:

***H3:** The influence of the outside-in orientation and the inside-out orientation on innovation performance is stronger in the high-tech industry than it is in the low-tech industry.*

2.4.2 Developed vs. developing economies. In developing economies firms are often faced with inadequate infrastructure and limited resources (Radas & Bozic, 2009). Developing economies are usually more heterogeneous and in shorter supply of resources, skills, and capabilities than developed economies (e.g., UNDP, 1998). Their dynamism and turbulence are external factors that contribute to uncertainty (e.g., Eisenhardt & Martin, 2000). Because of these factors, the relative impact of internal and external sources of competitive advantage

is expected to be stronger in developing countries than it is in developed countries. On one hand, resource scarcity makes an inside-out orientation more impactful, as firms in developing countries must often compensate for the lack of knowledge, technologies, structure, and systems that sustain innovation. On the other hand, as the marketplaces in developing countries tend to be dynamic and unstable, market knowledge and end-product market positions are more transient, increasing firms' dependence on the outside-in perspective. Therefore, we propose that both inside-out and outside-in orientations may provide more of a differentiation mechanism in innovation performance for firms that operate under the less favorable economic conditions of developing economies than they do for firms in developed economies. Therefore,

***H4:** The influence of the outside-in orientation and the inside-out orientation on innovation performance is stronger in developing economies than it is in developed economies.*

2.4.3 Individualist vs. collectivist national cultures. Organizational culture is embedded in national culture, which reflects patterns of thinking, feeling, and acting that are rooted in a society's common values and conventions (Hofstede, 2001). Since national culture is an inherently complex construct, researchers have typically investigated it along specific dimensions that relate to problems all cultures confront, although the cultures deal with these problems in different ways (Lytle et al., 1995). Cultural values are likely to influence the extent to which innovation is enacted and cultivated (Hofstede, 2001). We argue that national cultural values shape the behavior of individuals in firms, ultimately influencing the effectiveness with which a strategic orientation is implemented (Kirca et al., 2005). Cross-cultural research has generally found that the strength of management levers' effects on

desired outcomes increases when these levers fit with the national cultural values because individuals feel comfortable with the management lever and act accordingly (e.g., Lachman, Nedd, & Hinings, 1994; Newman & Nollen, 1996).

Research has shown that Hofstede's (2001) individualism dimension of national culture influences dispositions towards innovation (Dwyer, Mesak, & Hsu, 2005; Steenkamp, Ter Hofstede, & Wedel, 1999). Individualism, the degree to which people prefer to act as individuals rather than as members of a group, influences people's willingness to develop or try new products (Steenkamp et al., 1999). Grinstein's (2008) and Calantone et al.'s (2010) meta-analyses provide evidence that the relationship between an outside-in orientation and innovation is stronger in national cultures that are characterized by a high level of individualism. Therefore, firms in individualist cultures, which are more innovative in nature, are likely to provide novel insights to outside-in-orientated firms, leading to superior innovation performance (Grinstein, 2008). The entrepreneurship literature has shown that individualist cultures value autonomy, self-reliance, personal freedom (van Hoorn, 2012), morality (Tabellini, 2008), and creativity (Jones & Davis, 2000; Shane, 1993)—all characteristics that are highly relevant to innovation (Lee & Peterson, 2000; Mueller & Thomas, 2000). Not only is individualism linked with new product development, taking competitive advantage (Howell, Shea, & Higgins, 2005; Nakata & Sivakumar, 1996), and radical innovation activity (Herbig & Miller, 1992), but it is also helpful in commercializing innovations successfully (Van de Ven, 1986).

However, there is also much evidence that does not support such links (Morris, Avila, & Allen, 1993; Thomas & Mueller, 2000; Tiessen, 1997). For example, successful commercialization of innovations requires continuous interaction between the inside-out focus (employees of the firm), and the outside-in focus (e.g., customers, suppliers, and other

external stakeholders), so collectivism is conducive to commercialization because it fosters social interactions and collaborative team behavior (Chatman et al., 1998; Eby & Dobbins, 1997). Despite the view that collectivism is a disincentive for entrepreneurship and innovation (e.g., Lewis, 1955), the collectivist cultural heritage is considered to be the “miracle” behind the development and growth of several Asian economies over the last few decades (e.g., Harrison, 1992; Redding, 1993). Collectivist cultures support collaboration in the organization (Engelen, Wiest, & Brettel, 2012) and facilitate the effectiveness of the firm’s overall strategic organization (De Clercq, Dimov, & Thonpanpanl, 2010; Triandis, 2000). Therefore,

***H5:** The influence of the outside-in orientation and the inside-out orientation on innovation performance is stronger in collectivist national cultures than it is in individualist cultures.*

3. Methods

3.1 Database Development

To ensure the representativeness and completeness of the database used in the meta-analysis, a comprehensive search was conducted in the following bibliographic databases for studies published before August 2013: ABI/INFORM, PsycINFO, EBSCO (Business Source Elite), EconLit, ERIC (Expanded Academic Index), JSTOR Databases, Science Direct, and Wilson Business Abstracts, using the keywords “market responsiveness,” “innovation,” “innovativeness,” “dynamic capabilities,” “resource-based view,” “resource orientation,” “market-based view,” “inside-out,” “outside-in,” “market orientation,” and “customer orientation.” Then a manual search was also carried out in fifteen marketing and management journals of widely acknowledged scholarly value (Baumgartner

& Pieters, 2003; Palich, Cardinal, & Miller, 2000; Rubera & Kirca, 2012).¹ Finally, the reference lists from the identified studies were examined for inclusion based on whether:

- (1) innovation and firm performance constructs were both measured at the firm level;
- (2) the focus of study was on the relationship between the effect of inside-out orientation on innovation and firm performance and/or the effect of outside-in orientation on innovation and firm performance;
- (3) the research was not qualitative, as the study had to report the Pearson correlation coefficient for the specified relationship or provide sufficient statistical information that allowed us to compute a correlation coefficient with the formulas provided by Hunter and Schmidt (1990: p. 272) (e.g., r , univariate F , t , χ^2); and
- (4) the studies were independent (i.e., correlation coefficients from different samples).

One author initially coded all the studies according to the definitions and criteria summarized in Table 1. Then the second author assessed the coding reliability by independently coding thirty randomly selected studies. Two raters independently assessed the methodological quality of the studies using the quality assessment scale (Hayden, Cote, & Bombardier, 2006), which assesses four main areas of bias: reporting bias, external validity, internal validity, and selection bias, yielding total quality assessment scores that ranged from 0 to 37, with a higher score indicating higher study quality. An inter-rater reliability analysis using an intra-class correlation coefficient (ICC) statistic (two-way-mixed model, absolute agreement) to determine consistency among raters revealed that ICC=0.95 (95% CI = 0.91–

¹*Academy of Management Journal, Industrial Marketing Management, International Journal of Marketing Research, Journal of Business Research, Journal of International Business Studies, Journal of Management, Journal of Management Studies, Journal of Marketing, Journal of Marketing Research, Journal of Product Innovation Management, Management Science, Marketing Science, Journal of the Academy of Marketing Science, Organization Science, and Strategic Management Journal.*

0.97), which is considered to be high (Kirca et al., 2005). Any inconsistencies were resolved through discussions and coding guidelines. Table 1 presents the definitions and coding scheme of variables.

---INSERT TABLE 1 HERE---

Furthermore, to enhance the validity and reliability of our study and to divide capabilities between the inside-out and outside-in orientations, we asked five subject-matter experts—three professors and two PhD students from the US, Europe, and Australia who had done research in the area of innovation and entrepreneurship—to code the degree to which our categories measured what they were supposed to measure. The experts received an introductory letter explaining how to use a 5-point rating scale to indicate the importance of each of twenty variables identified for our meta-analysis with regard to the inside-out and the outside-in orientation views. Once we received these ratings, we analyzed only the fifteen variables that showed a high level of inter-rater agreement, using a cut-off point for inter-rater agreement of $>.70$ (Lance, Butts, & Michels, 2006) (Table 1).

On completion of the search process in July 2013, our final database consisted of 232 studies for the relationship between the effect of inside-out orientation on innovation and firm performance and for the relationship between the effect of outside-in orientation on innovation and firm performance (with an overall N of 38,051).²This database is a strong empirical basis for a meta-analysis (Brinckmann et al., 2010; Calantone et al., 2010; Rosenbusch et al., 2011).

²The appendix presents a list of studies included in the meta-analysis. A complete bibliography is available from the authors.

3.2 Meta-analytic procedures

Following Hunter and Schmidt (2004), bivariate statistics were integrated across the studies. We corrected the effect sizes for sampling errors and measurement errors in the underlying studies by dividing the correlation coefficient by the product of the square root of the reliabilities of the two constructs (Hunter & Schmidt, 2004) and calculating aggregated Cronbach's alphas and 95% confidence interval (CI) across the studies for all variables. A CI other than zero indicates a significant effect. Next, we constructed a meta-analytical inter-correlation matrix of all variables (Table 2), obtaining each cell in the matrix from a separate meta-analysis. The mean reliability of each construct is reported in the diagonal of the correlation matrix (Table 2). We used random-effects models to calculate the mean correlations. To estimate the severity of publication bias, we conducted file-drawer analyses in order to provide the number of null-effect studies, since including them in the meta-analysis would render our overall result insignificant (Rosenthal, 1979).

3.2.1 Path analysis. To test the hypothesized relationships, we employed a combination of structural equation modeling (SEM) and meta-analytic techniques using MPlus v 5.2. We constructed a meta-analytical inter-correlation matrix using mean correlations adjusted for sample size for each pair of constructs in the model (Viswesvaran & Ones, 1995). This matrix was then used as input for structural equation modeling analyses using the full-information maximum likelihood method. Each cell in the matrix was obtained from a separate meta-analysis. We followed Viswesvaran and Ones (1995) in dealing with empty cells in the correlation matrix. We tested the precision of parameter estimates through the harmonic mean, which we determined using the sample sizes across effect-size cells that were comprised of each entry in the correlation matrix (Colquitt et al., 2000; Parker et al.,

2003). We evaluated the model fit by calculating the root mean square error of approximation (RMSEA), the comparative fit index (CFI; Bentler, 1990), and the standard chi-square statistic (χ^2).

3.2.2 Hierarchical linear modeling analysis. Finally, we tested the hypothesis of homogeneity of the population correlations using the Q -statistic [$Q = \Sigma(n_i - 3)(z_i - z)^2$], which has a chi-square distribution with $k-1$ degrees of freedom (Hedges & Olkin, 1985). The homogeneity tests for the correlations between inside-out \rightarrow innovation performance ($\chi^2_{90} = 555.80, p < .01$), outside-in \rightarrow innovation performance ($\chi^2_{90} = 425.80, p < .01$), inside-out \rightarrow firm performance ($\chi^2_{150} = 1055.70, p < .0001$) and outside-in \rightarrow firm performance ($\chi^2_{84} = 528.90, p < .01$) were significant, indicating that moderator variables may explain the heterogeneity in the effect sizes (Lipsey & Wilson, 2001).

4. Results

The correlation matrix (Table 2) serves as the basis for a path analysis and provides some first indications of the relationships among the study's constructs. The reliability-corrected correlations (\bar{r}_c) among the four constructs range between .14 and .47. According to Cohen (1988), these effect sizes can be considered medium to high in strength. Both inside-out orientation ($\bar{r}_c = .46$) and outside-in orientation ($\bar{r}_c = 0.41$) are positively correlated with innovation, although the relationship is stronger for the inside-out orientation. The outside-in orientation and firm performance relationship ($\bar{r}_c = .32$) is stronger than the inside-out orientation and firm performance relationship ($\bar{r}_c = .26$). Finally the estimated relationship between innovation performance and firm performance ($\bar{r}_c = .14$) is comparable to that reported by Rosenbusch et al. (2011; $\bar{r}_c = .13$), which indicates that the inclusion of more

recent studies did not alter the results. The bivariate results show that all relationships are statistically significant, that is, the 95% confidence interval does not include zero.

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To estimate the overall relationship among the inside-out orientation, the outside-in orientation, innovation performance and firm performance, we compared two structural equation models. Model 1 includes the inside-out and the outside-in orientations as direct antecedents to innovation performance, and Model 2 includes the inside-out and the outside-in orientations as direct antecedents to firm performance. The results of the model testing are provided in Table 3. Model 1 indicates that the inside-out orientation ($\beta = .33, p < .001$) and the outside-in orientation ($\beta = .26, p < .001$) are significantly related to innovation performance, and Model 2 indicates that the inside-out orientation ($\beta = .12, p < .001$) and the outside-in orientation ($\beta = .25, p < .001$) are significantly related to firm performance.

---INSERT TABLE 3 HERE---

We also performed post hoc analyses to determine whether innovation performance mediates the relationship between the orientations (the inside-out and outside-in orientations) and firm performance. To estimate the overall relationship between the inside-out orientation, the outside-in orientation, innovation performance, and firm performance, we compared a structural equation model that includes the inside-out orientation, the outside-in orientation and innovation performance as a direct antecedent to firm performance (Model 1) to a structural equation model that posits innovation performance as a mediator between the inside-out and the outside-in orientation and firm performance (Model 2). Model 1 indicates that the inside-out orientation ($\beta = .32, p < .001$) and the outside-in orientation ($\beta = .26, p < .001$) are significantly related to innovation performance and that innovation performance has a positive influence on firm performance ($\beta = .13, p < .001$). However, the inclusion of

innovation performance in Model 2 decreases the effect size of inside-out orientation (from .32 to .16) and that of outside-in orientation (from .26 to .24), but both remain significant, suggesting partial mediation.

Table 4 presents the results of the moderator analyses. In conducting this analysis, we first tested the moderating effect of the industry type. Model 1 displays the results for firms in high-tech and low-tech industries and indicates a reasonable fit. Consistent with H3, the outside-in \rightarrow innovation performance relationship is stronger in high-tech industries ($\beta = .36$) than in low-tech industries ($\beta = .28$). However, the results for inside-out orientation were contrary to H3, as the inside-out \rightarrow innovation performance relationship is stronger in low-tech industries ($\beta = .35$) than in high-tech industries ($\beta = .25$). These results highlight the relative importance of the inside-out orientation in low-tech industries and the outside-in orientation in high-tech industries.

Our meta-analysis also provides insights regarding the contingent nature of these relationships in the context of a country's level of economic development. The models of the subgroup of studies, including firms in developed and developing economies, reveal a reasonable model fit. Consistent with H4, both inside-out ($\beta_{\text{developed}} = .28$; $\beta_{\text{developing}} = .43$) and outside-in orientations ($\beta_{\text{developed}} = .26$; $\beta_{\text{developing}} = .35$) have stronger influence on innovation performance in developing economies than they do in developed economies (Model 2). These findings support H4.

Finally, we tested the moderating effect of cultural context. Model 3 reports results for firms in collectivist and individualist national cultures and indicates a reasonable fit. Consistent with H5, both inside-out ($\beta_{\text{collectivist}} = .39$; $\beta_{\text{individualist}} = .27$) and outside-in orientations ($\beta_{\text{collectivist}} = .36$; $\beta_{\text{individualist}} = .25$) have stronger influence on innovation

performance in collectivist national cultures than on that individualist national cultures. These findings support H5.

5. Discussion

The inside-out and the outside-in perspectives point to different sources of competitive advantage for firms (Roquebert, Phillips, & Westfall, 1996). Even though both perspectives consider both internal and external elements, they vary in terms of the relative emphasis they place on these elements (Paladino, 2009). While the inside-out orientation primarily considers organizational resources, rather than competitors and customers (implicitly), the outside-in orientation appears to reverse the order by first examining customers and competitors and only then the degree to which the firm responds to them, so organizational resources are implicitly addressed (Paladino, 2007). In the context of innovation performance, the inside-out and the outside-in orientations represent a continuum of approaches to innovation, as inside-out-orientated firms are likely to ascertain the strength of their position, whereas outside-in orientated firms rely on the market for standards to attain (Day, 1990). Consequently, the former risks neglecting to seek opportunities to serve their customers better and overlooking important competitive forces (Paladino, 2007). Day (2011) argues that, as a starting point for strategic thinking, the inside-out perspective narrows and anchors the dialogue prematurely (p. 187). Outside-in orientated firms may also introduce products and services that they are unprepared to serve, whereas inside-out firms may miss major changes in the marketplace that would require the development of new capabilities (Paladino, 2009, p. 536). Research has also documented that the managerial attention of outside-in firms on the target market and mainstream customers can influence resource allocation in the innovation process, which is negatively associated with the firm's ability to

co-evolve with technology dynamics (Christensen, 2006). On the other hand, the inside-out perspective can provide organizations with the inputs required for innovation that improve performance (Eisenhardt & Martin, 2000). In emphasizing the importance of the inside-out perspective, some researchers have suggested that the firm's perspective influences the market context in which it competes through new product development and innovation (Scarbrough, 1998) and provides resources for continuous innovation (Roberts, 1999). Hence, while it appears that the outside-in perspective contributes to innovation performance, research suggests that the inside-out perspective will have more impact (Paladino, 2009).

To clarify this inconclusive and disconnected debate on the relative importance of inside-out and outside-in orientations, this study develops a detailed, contextualized elaboration of the relationship between a firm's strategic posture (i.e., inside-out orientation and/or outside-in orientation) and its innovation performance. Accordingly, the study makes four key contributions. First, we respond to the call for comparative studies of diversified strategic orientations (Noble, Sinha, & Kumar, 2002) and the to challenge of untangling the effects of outside-in orientation and the inside-out orientation on innovation performance (Henderson & Mitchell, 1997; Makhija, 2003; and Paladino, 2007, 2008). Our findings provide systematic evidence that the inside-out orientation has a stronger impact on innovation performance than does the outside-in orientation, indicating that effective use of internal resources can augment a firm's innovation performance (Paladino, 2007, 2009; Crossan & Apaydin, 2010). We also find that the outside-in orientation has a stronger impact on firm performance, which, consistent with Paladino (2009), translates into the need for organizational investment in the synergistic resource development that will enable a firm to maximize its ability to develop a market offering that is difficult to emulate. Such an investment may come at the expense of listening to the customer, as many of the world's

leading radical innovations (e.g., the Walkman, the computer, the videotape), with their lead-the-customer strategies, have recognized a gap in the market and used their unique internal resources and capabilities to create a unique product of value to the consumer.

Second, we provide additional insight to the recently conducted extensive meta-analysis by Calantone et al. (2010), which is based on 64 studies conducted up to 2006. Their study conceptualizes firm performance as context-based: that is, based on the level of analysis (product–project vs. program–SBU), nature of change (internal vs. external), product vs. services, and country of data collection (Western vs. Asian). By contrast, our meta-analysis examines a larger sample (232 studies; $N = 38,051$), and we examine studies conducted after 2006, which lie outside of the scope of Calantone et al.’s (2010) meta-analysis. We also propose the contextual framework (high-tech vs. low-tech industry, developing vs. developed economy, individualist vs. collectivist culture) in which a firm’s overall performance and innovation performance might be increased, thereby extending Calantone et al.’s (2010) context-based framework.

Third, we contribute to the innovation literature by examining both the antecedents and the consequence of innovation performance, as extant research has conceptualized innovation performance predominantly as an independent variable or an outcome variable (Rosenbusch et al., 2011). To test the mediator role of innovation performance between strategic orientation and overall performance, we conduct a post-hoc test to calculate direct, indirect, and total effects and find the indirect effects of inside-out orientation and outside-in orientation on overall firm performance via innovation performance are positive and significant. Thus, we show that a firm’s resources and capabilities (inside-out and outside-in) provide conditions that facilitate successful innovation performance. This result helps to clarify the role of resources and the resource deployment mechanisms that enhance

performance and suggests that innovation performance is driven by (1) organizational resources and routines that enable the transfer and absorption of knowledge and skills in a firm (Crossan & Apaydin, 2010; Paladino, 2007; 2009), (2) a firm's endeavors to devote resources to understand customers (Han, Kim, & Srivastava, 1998), and (3) a firm's competitive positioning in the marketplace (Pelham, 1997).

Fourth, we extend the literature by investigating the moderating effects on innovation performance of industry type (high-tech vs. low-tech), economic development (developed vs. developing countries), and cultural context (collectivist vs. individualist cultures) on the impact of inside-out orientation and outside-in orientation. Our results confirm the contingent nature of these relationships, indicating that the conflicting findings in the literature may be attributed to the diversity of research contexts. Specifically, our findings show that the effect of the outside-in orientation on innovation performance is stronger in high-tech industries, while the inside-out orientation on innovation is stronger in low-tech industries. These findings are broadly in line with Drucker's (1985) speculation that knowledge-intensive high-tech firms must analyze their intended users' needs carefully. The inside-out orientation is more likely to contribute to innovation success when accompanied by a strong outside-in orientation, especially in high-tech industries (Dutta, Narasimhan, & Rajiv, 1999). These domains remain relatively under-researched, and scholars have asked for additional examination (Atuahene-Gima, 2005; Danneels, 2002; Im & Workman, 2004).

We also find differences associated with country-level factors. The effects of both the inside-out and outside-in orientations on innovation performance are stronger for firms that operate under less favorable economic conditions and in collectivist cultures. Findings from Rosenbusch et al.'s (2011) meta-analysis also suggest that the firms in collectivist cultures benefit more from innovation than do those in individualist cultures. Our results contrast the

findings of Calantone et al.'s (2010) and Grinstein's (2008) meta-analyses, in which they find a stronger relationship between customer orientation (outside-in orientation) and innovation performance in individualist cultures than in collectivist cultures. We find support for our finding in the literature that suggests that collectivist cultures support collaboration in the organization (Engelen, Wiest, & Brettel, 2012), facilitating the effectiveness of the strategic posture implemented by the entire firm (De Clercq et al., 2010; Triandis, 2000). We suggest that firms in individualist countries encourage their employees to adopt innovation-oriented work methods to enhance their inside-out orientation, which could result in enduring performance superiority (O'Reilly & Tushman, 2004). Naturally, as firms undertake initiatives to strengthen their outside-in orientation through collaboration and outsourcing activities, it may not be necessary to develop the required knowledge bases internally (inside-out orientation). Whatever a firm's competencies, the managerial challenge is to translate them into relevant customer arguments (Ritter, 2006).

6. Conclusion and managerial and theoretical insights

This meta-analysis outlines a holistic innovation-management strategy that involves both the inside-out and the outside-in orientations. Further empirical research is needed in order to clarify how firms can get the maximum benefits from these orientations, why and how a firm's innovation performance improves, and why it sometimes decline.

Because data limitations required that we use a limited scope in examining the outside-in orientation, we suggest that future research expand the outside-in orientation with more dimensions, such as competitor orientation, customer orientation, and external collaboration as individual dimensions, and the orientation's effect on decision making and new-product performance. In addition, to strengthen our proposed research framework,

longitudinal studies of forward-looking indicators, such as the growth perspective, along with consistent time-series analysis should be conducted. Most of the data in the studies that we consulted were gathered from management and employees, but customer input may be required since new product performance measurement involves market acceptance. Therefore, future research should approach customers directly in order to provide multilevel analysis on innovation.

Future research should also consider cultural dimensions in order to overcome some of the confusion in the literature, as some studies have shown a small effect of the outside-in orientation and some have shown no effect of the inside-out orientation. For instance, expanded primary research could investigate a wider variety of cultural dimensions and the countries' entrepreneurial frameworks. Research indicates that a firm's ability to commercialize a new product successfully depends not only on its own capabilities, but also on a wide range of factors in the firm's broader national context (Spencer, 2003). Research that considers more cultural dimensions would help to build boundary conditions for successful innovation performance.

Finally, future research should investigate the mediating role of a firm's capabilities—that is, formalization, centralization, cross-functional integration, pride among employees, organizational commitment, and identification—in the relationships involving innovation performance, market position, financial position, and firm value. Drawing on a contingency perspective, such studies could determine whether the effect of the inside-out and the outside-in orientations on innovation performance varies with environmental turbulence and the nature of the moderation.

Our study has two important methodological limitations. First, as we have constructed our database based on previous studies, we do not consider multiplicative interaction terms,

such as how individualism and economic development's interaction affects the relationship between firm's strategic posture and innovation performance. Second, transforming a continuous variable into a categorical variable causes a loss of information. However, the major advantages of meta-analysis are that it offers a more accurate estimate of the support for a theory than other methods for assessing a research stream do, and that it can test theory that is difficult to assess through other means, as is the case with the appropriability condition (Combs, Crook, & Shook, 2006; Crook et al., 2008).

Figure 1. Research Framework

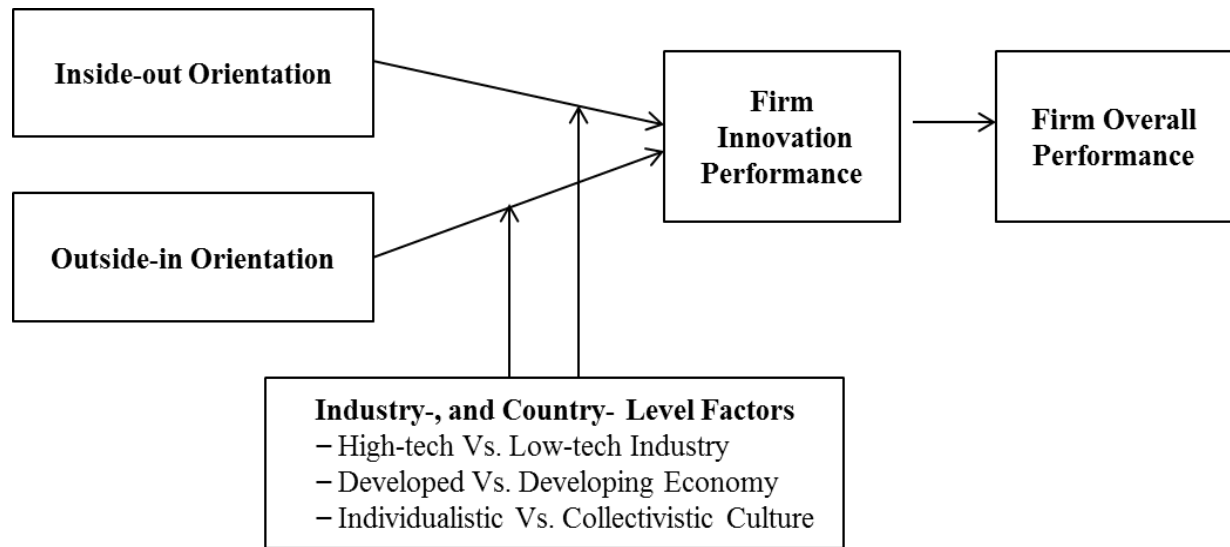


Table 1

Definition and Codification of the meta-analysis variables

Variable	Definition	Coding scheme
Firm Performance	A multidimensional construct that describes the extent to which organizations meet financial objectives. It consists of profitability, growth, and capital market performance dimensions and can be assessed using objective or perceived measures (Combs et al., 2005).	<ol style="list-style-type: none"> 1. Profitability dimension: ROA, ROE, ROS, operating margins 2. Growth dimension: sales growth, employment growth, and growth in market share 3. Capital market dimension: Tobin's q, stock price premium, market-to-book, value, stock returns 4. Perceived performance scales (e.g., Wiklund & Shepherd, 2003)
Innovation Performance ³	"Innovation is production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems." (Crossan & Apaydin, 2010: p. 1155).	<ol style="list-style-type: none"> 1. Service/product improvement (e.g., Xie, Liu, & Chen, 2007; Leiponen, 2008) 2. Number of new products /service introductions (e.g., Zhou, Yim, & Tse, 2005) 3. Incremental innovation (e.g., Menguc & Auh, 2010; Sorescu & Spanjol, 2008) 4. Exploitative innovation (e.g., Morgan & Berthon, 2008) 5. Exploratory innovation (e.g., Morgan & Berthon, 2008) 6. Pioneer innovation (e.g., Atuahene-Gima & Ko, 2001) 7. Radical Innovation (e.g., Li, Lin, & Chu, 2008; Tellis, Prabhu, & Chandy, 2009) 8. Innovation performance (e.g., Kaya & Patton, 2011) 9. New product success and performance (e.g., Baker & Sinkula, 1999) 10. Number of new product /service introductions (e.g., Dushnitsky & Lenox, 2005)
Inside-out Orientation	The set of everything known or understood by an organization and its members (Nonaka & Takeuchi, 1995).	<ol style="list-style-type: none"> 1. Learning capability (Morgan & Berthon, 2008) 2. Internal sources (Ganter & Hecker, 2013) 3. Organizational capital (R & D) (Carmona-Lavado, Cuevas-Rodríguez, & Cabello-Medina, 2010) 4. Innovative culture (Martín-de Castro, Delgado-Verde, Navas-López, & Cruz-González, 2013) 5. Resource orientation (Paladino, 2008) 6. Commitment to innovation (Tsai, Joe, Ding, & Lin, 2013) 7. R&D intensity (Chen & Huang, 2010) 8. Knowledge acquisition, organizational memory (Bhuiana, Menguc, & Bell, 2005) 9. HR practices (Mavondo, Chimhanzi, & Stewart, 2005) 10. Organization structure (Lin, Peng, & Kao, 2008)

³ Of the various dimensions of innovation that appear in the literature (e.g., Camison-Zornoza et al., 2004), in this meta-analysis we analyze only the types of innovation according to the dimensions of the construct adopted in the primary studies.

Outside-in Orientation	A market-based focus on customer orientation, competitor orientation, and interdepartmental integration (Kahn, 2001; Narver & Slater, 1990).	<ol style="list-style-type: none"> 1. Relationship quality, customer network ties (Yli-Renko, Autio, & Sapienza, 2001) 2. Customer orientation (Hillebrand, Kemp, & Nijssen, 2011) 3. Proactive and responsive market (Li, Lin, & Chu, 2008) 4. Market-related exploitative and explorative capabilities (Lisboa, Skarmas, & Lages, 2011) 5. Competitor orientation (Mavondo, Chimhanzi, & Stewart, 2005)
Industry type	Industries with a high level of dependence on science and technology are high-tech industries, and industries with a low level of dependence on science and technology are low-tech industries (Rubera & Kirca, 2012; Unger et al., 2011).	<ol style="list-style-type: none"> 1. High-tech industry (aerospace, biotechnology, communication equipment, computers and office machinery, pharmaceuticals, and semiconductors) 2. Low-tech industry (appliances, banking, construction, entertainment, and food)
Economic development	Developed economies are characterized by stable demand, intense competition, short channels, and sophisticated buyers (Ellis, 2006).	We followed Unger et al.'s (2011) method for categorizing the countries into developed and developing categories. Countries that receive development assistance and aid were considered developing countries (Organisation for Economic Co-operation and Development; Manning, 2005).
National cultural context	<p>Culture reflects patterns of thinking, feeling, and acting rooted in the common values and conventions of a society (Hofstede, 2001).</p> <p><i>Individualist cultures</i> - Individuals are motivated by personal goals.</p> <p><i>Collectivist cultures</i> - Individuals try to subordinate their personal goals to the goals of a group of which they are part.</p>	We assigned an individualism index value (IND) based on each study's information about its country sample (Hofstede & Hofstede, 2005). Since our focus was on the relative differences between countries, rather than absolute levels of IND, we computed the median value of the countries indices covered by the sample and obtained a cut-off value of 37 for IND. The individualist group contains countries with IND scores between 41 and 91 (e.g., the US and Spain), and the collectivist group contains studies carried out in countries with IND scores between 17 and 37 (e.g., Taiwan and Turkey).

Table 2
Correlations among study variables

		1	2	3	4
1.	Firm Performance	<i>0.80</i>			
2.	Innovation Performance		<i>0.73</i>		
	<i>R</i>	0.13			
	\bar{r}_c	0.14			
	<i>N</i>	17,809			
	<i>K</i>	69			
	CI	0.10 – 0.19			
3.	Inside-out Orientation			<i>0.78</i>	
	<i>R</i>	0.22	0.42		
	\bar{r}_c	0.26	0.46		
	<i>N</i>	33,838	20,718		
	<i>K</i>	150	90		
	CI	0.24 – 0.28	0.35 – 0.57		
4.	Outside-in Orientation				<i>0.76</i>
	<i>R</i>	0.30	0.38	0.42	
	\bar{r}_c	0.32	0.41	0.47	
	<i>N</i>	19,765	20,718	10,112	
	<i>K</i>	84	90	46	
	CI	0.29 – 0.35	0.29 – 0.52	0.20 – 0.64	

Note: *r* = sample-size-corrected mean effect size; \bar{r}_c = sample-size- and reliability-corrected mean effect size; *N* = total sample size; *k* = number of independent samples; CI = 95% confidence interval.

The values in italics on the diagonal reflect mean reliabilities (Cronbach's α).

Table 3
Model estimation results

	<u>Model 1</u> <i>Innovation performance</i>	<u>Model 2</u> <i>Firm performance</i>
	PC (t Value)	PC (t Value)
Inside-out Orientation	0.33 (19.90***)	0.12 (5.99***)
Outside-in Orientation	0.256 (8.57***)	0.26 (8.10***)
$\chi^2(df)$	13.77 (1)**	17.31 (1)**
RMSEA	0.08	0.15
p value of χ^2	.000	.000
CFI	0.95	0.90

Note: PC = path coefficient; RMSEA = root mean square error of approximation; CFI = comparative fit index.

** $p < 0.01$. *** $p < 0.001$.

Table 4

Model Estimation Results: Contextual Moderators

	<u>Model 1</u>		<u>Model 2</u>		<u>Model 3</u>	
	<i>Industry Type</i>		<i>Economic Development</i>		<i>Individualism</i>	
	High-tech	Low-tech	Developed	Developing	Collectivistic	Individualistic
	PC (t Value)		PC (t Value)		PC (t Value)	
Inside-out Orientation → Innovation Performance	0.25 (3.82**)	0.35 (9.12**)	0.28 (3.50**)	0.43 (11.08***)	0.39 (9.64**)	0.27 (4.22**)
Outside-in Orientation → Innovation Performance	0.36 (6.54*)	0.28 (3.18*)	0.26 (3.08**)	0.35 (10.78***)	0.36 (7.70**)	0.25 (3.64**)
$\chi^2(df)$	13.21(1)**	9.31 (1)**	7.20 (1)**	8.78 (1)**	9.72 (1)**	8.01 (1)**
RMSEA	0.08	0.09	0.08	0.06	0.10	0.08
CFI	0.99	0.79	0.85	0.88	0.88	0.99

Note: PC = path coefficient; RMSEA = root mean square error of approximation; CFI = comparative fit index.

* $p < 0.001$; ** $p < 0.0001$

Appendix: List of studies included in the meta-analysis

- Agarwal, Erramilli, & Dev (2003)
 Ahmed Zebal (2003)
 Ahuja and Katila, 2004
 Appiah-Adu (1998)
 Atuahene-Gima & Ko (1996)
 Atuahene-Gima & Ko (2001)
 Atuahene-Gima & Ko (2005)
 Atuahene-Gima, Slater, & Olson (2005)
 Augusto & Coelho (2009)
 Auh & Menguc (2009)
 Bae & Lawler (2000)
 Bae, Chen, Wan, Lawler, & Walumbwa (2003)
 Baker & Sinkula (1999)
 Baker & Sinkula (2007)
 Baker & Sinkula (2009)
 Balakrishnan (1996)
 Bergh (2001)
 Berman, Down, & Hill (2002)
 Bhuiana (1998)
 Bhuiana, Menguc & Bell (2005)
 Bodlaj (2010)
 Brettel & Cleven (2011)
 Brush and Artz, 1999
 Calantone, Garcia & Droge (2003)
 Capron (1999)
 Carmeli & Tishler (2004)
 Carmeli (2004)
 Caruana, Pitt, & Berthon (1999)
 Caruana, Ramaseshan, & Ewing (1997)
 Caruana, Ramaseshan, & Ewing (1998a)
 Caruana, Ramaseshan, & Ewing (1998b)
 Caruana, Ramaseshan, & Ewing (1999)
 Cervera, Molla & Sanchez (2001)
 Chadwick, Hunter, & Walston (2004)
 Challis, Samson, & Lawson (2002)
 Chan, Shaffer, & Snape (2004)
 Chandler & Hanks (1994)
 Chih, Huang & Yang (2011)
 Cillo, De Luca, & Troilo (2010)
 Cho & Pucik (2005)
 Collins & Clark (2003)
 Combs & Ketchen (1999)
 Datta, Guthrie, & Wright (2005)
 Dawes (2000)
 Debruyne, Frambach & Moenaert (2010)
 DeCarolus & Deeds (1999)
 DeCarolus (2003)
 Deephouse (2000)
 De-Luca, Verona & Vicari (2010)
 Deng & Dart (1994)
 Deshpande & Farley (1998)
 Deshpande, Farley & Webster (1999)
 Dhanaraj & Beamish (2003)
 Dibrell, Craig & Hansen (2011)
 Dobni & Luffman (2000)
 Douglas & Ryman (2003)
 Doyle & Wong (1998)
 Droge, Calantone & Harmancioglu (2008)
 Droge, Claycomb, & Germain (2003)
 Duncan (2000)
 Edelman, Brush, & Manolova (2005)
 Ethiraj, Kale, Krishnan, & Singh (2005)
 Farrell & Oczkowski (2002)
 Farrell (2000)
 Farrell, Oczkowski, & Kharabsheh (2008).
 Fey, Bjorkman, & Pavlovskaya (2000)
 Flamholtz & Kannan-Narasimhan (2005)
 Frambach, Prabhu, & Verhallen (2003)
 Fritz (1996)
 Gatignon & Xuereb (1997)
 Ghorbani, Soleimani, & Madani (2012).
 Gotteland & Boulé (2006)
 Gray, Matear, & Matheson (2000)
 Gray, Matear, Boshoff, & Matheson (1998)
 Greenley (1995)
 Grewal & Tansuhaj (2001)
 Guerrero & Barraud-Didier (2004)
 Guest, Michie, Conway, & Sheehan (2003)
 Hajipour & Ghanavat (2012)
 Han, Kim, & Srivastava (1998)
 Harris & Ogbonna (2001)
 Hayton (2003)
 Hillebrand, Kemp & Nijssen (2011)
 Hillman & Keim (2001)
 Hitt, Bierman, Uhlenbruck, & Shimizu (2006)
 Hooley, Cox, Fahy, Shipley, Beracs, Fonfara, & Snoj (2000)
 Hooley, Greenley, Cadogan, & Fahy (2005)
 Hsieh, Tsai & Wang (2008)
 Hult & Ketchen (2000)
 Hult & Ketchen (2001)
 Hult, Hurley, & Knight (2004).
 Huselid (1995)
 Huselid, Jackson, & Schuler (1997)
 Ingenbleek, Frambach & Verhallen (2010)
 Jaw, Lo & Lin (2010)
 Jaworski & Kohli (1993)
 Jimenez-Jimenez, Sanz-Valle & Hernandez-Espallardo (2008)
 Kam, Sing & Tong (2011)
 Kaya & Patton (2011)
 Keskin (2006)
 Khan (2001)
 Kim & Atuahene-Gima (2010)
 Kim, Im & Slater (2013)
 Kor (2006)
 Kropp, Lindsay & Shoham (2006)
 Kyriakopoulos & Moorman (2004)

- Lado, Maydeu-Olivare & Rivera (1998)
 Lambe, Spekman, & Hunt (2002)
 Langerak (2001)
 Langerak, Hultink & Robben (2004)
 Lee & Grewal (2004)
 Lee & Miller (1999)
 Lee & Tsai (2005)
 Lee, Lee, & Pennings (2001)
 Li, Lin & Chu (2008)
 Lin & Chen (2006)
 Lin, Che & Ting (2012)
 Lin, Peng & Kao (2008)
 Lisboa, Skarmeas & Lages (2011)
 Liua, Luob, & Shi (2003)
 Lonial, Tarim, Tatoglu, Zaim & Zaim (2008)
 Lopez (2003)
 Luneborg & Nielsen (2003)
 Luo, Griffith, Liu, & Shi (2005)
 Maatoofi & Tajeddini (2011)
 Manev, Gyoshev, & Manolova (2005)
 Matsuno & Mentzer (2000)
 Matsuno, Mentzer, & Ozsomer (2002)
 Matsuno, Mentzer, & Rentz (2000)
 Mavondo & Farrell (2003)
 Mavondo (1999)
 Mavondo, Chimhanzi & Stewart (2005)
 Menguc & Barker (2005)
 Menguc & Ozanne (2005)
 Menguc, Auh & Shih (2007)
 Micheels & Gow (2012)
 Miller (2006)
 Miller and Shamsie (1996)
 Miller (2004)
 Moliterno & Wiersema (2007)
 Moorman & Rust (1999)
 Morgan & Berthon (2008)
 Morgan, Vorhies & Mason (2009)
 Morrow, Sirmon, Hitt, & Holcomb (2007)
 Mu & Di-Benedetto (2011)
 Narver & Slater (1990)
 Narver, Slater, & MacLachlan (2004)
 Nasution, Mavondo, Matanda, & Ndubisi (2011)
 Ngai & Ellis (1998)
 Ngansathil (2001)
 Ngo & O'Cass (2012)
 Oczkowski & Farrell (1998)
 Paladino (2008)
 Park & Luo (2001)
 Park, Mitsunashi, Fey, & Bjorkman (2003)
 Patterson, West, & Wall (2004)
 Pelham & Wilson (1996)
 Pelham (1997)
 Pelham (1999)
 Pelham (2000)
 Peng & York (2001)
 Perry-Smith & Blum (2000)
 Pett & Wolff (2006)
 Phua (2006)
 Pitt, Caruana, & Berthon (1996)
 Powell & Dent-Micallef (1997)
 Powell (1992)
 Powell (1995)
 Prahinski & Benton (2004)
 Pulendran, Speed, & Widing (2000)
 Radas & Bozic (2009)
 Raju & Lonial (2002)
 Raju, Lonial, & Gupta (1995)
 Ramaseshan, Caruana, & Pang (2002)
 Rapp, Schillewaert, Hao (2008)
 Renko, Carsrud & Brännback (2009)
 Reulink (2012)
 Rhee, Park & Lee (2010)
 Rojsek & Konic (2008)
 Rothaermel & Thursby (2005)
 Saini et al. (2002)
 Salavou, Baltas & Lioukas (2004)
 Sandvik & Sandvik (2003)
 Schlemmer & Webb (2006)
 Selnes, Jaworski, & Kohli (1996)
 Shaw, Gupta, & Delery (2005)
 Shoham & Rose (2001)
 Siguaw & Honeycutt (1995)
 Simonin (1997)
 Sin & Tse (2000)
 Sin, Tse, Alan, Yau, Oliver, Chow & Lee (2003)
 Skaggs & Youndt (2004)
 Slater & Narver (1994)
 Slater & Narver (2000)
 Slotegraaf, Moorman, & Inman (2003)
 Snoj, Milfelner & Gabrijan (2007)
 Soehadi, Hart, & Tagg (2001)
 Song, DiBenedetto, & Mason (2007)
 Spanjol, Qualls & Antonio-Rosa (2011)
 Steensma & Corley (2000)
 Stone & Wakefield (2000)
 Subramanian & Gopalakrishna (2001)
 Subramanian, Kumar & Strandholm (2009)
 Sun, Aryee, & Law (2007)
 Tan, Mavondo & Worthington (2011)
 Tanriverdi & Venkatraman (2005)
 Thompson & Heron (2005)
 Tippins & Sohi (2003)
 Tsai, Joe, Ding & Lin (2012)
 Tzokas, Carter & Kyriazopoulos (2001)
 Van-Riel, Lemmink & Ouwersloot (2004)
 Wang & Ang (2004)
 Wang, Lo, & Yang (2004)
 Wei & Morgan (2004)
 Wei & Wang (2011)
 Wei, Frankwick, & Nguyen (2012)
 Wiklund & Shepherd (2003)
 Wong & Tong (2011)
 Wood, Bhuian, & Kiecker (2000)
 Wren, Souder, & Berkowitz (2000)

Wright, Gardner, Moynihan, & Allen (2005)
Wright, McCormick, Sherman, & McMahan (1999)
Wright, Smart, & McMahan (1995)
Yannopoulos, Auh & Menguc (2012)
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